CLAIMS

What is claimed is:

1. A receiver system comprising:

a first receiver for receiving position information transmitted from at least one source;

at least one second receiver for receiving a plurality of measurement corrections transmitted respectively from a plurality of reference stations;

a combination circuit coupled to receive the plurality of measurement corrections, said combination circuit combining the measurement corrections to minimize transmission errors to produce a combined measurement correction; and

a position determination circuit coupled to the combination circuit and the first receiver for determining the location of the receiver system using the position information and the combined measurement correction.

2. The receiver system as set forth in claim 1, wherein the combination circuit performs a parity check on a first measurement correction data of the plurality of measurement corrections and substitutes portions of the first measurement correction data with corresponding portions of a second measurement correction data of the plurality of measurement corrections when parity errors are detected in the portions of the first measurement correction data.

3. The receiver system as set forth in claim 1, wherein the combination circuit further adjusts the measurement corrections to minimize a time bias and frequency bias of the measurement corrections prior to combining the measurement corrections.

4. The receiver system as set forth in claim 1, wherein the combined measurement correction data comprises a combination of at least two measurement correction data of the plurality of measurement corrections.

5. The receiver system as set forth in claim 2, wherein the first measurement correction data is transmitted by a first reference station of the plurality of reference stations and said second measurement correction data is transmitted by a second reference station of the plurality of reference stations, said first reference station being located closest in physical proximity to the receiver system and the second reference station being second closest to the receiver system.

6. The receiver system as set forth in claim 1, wherein the combination circuit continuously combines measurement correction data of the plurality of measurement corrections.

7. The receiver system as set forth in claim 6, wherein the combination circuit combines using a least squares method.

8. The receiver system as set forth in claim 6, wherein the combination circuit combines using a weighted average of the plurality of measurement corrections, each weight dependent upon the distance the receiver system is from the reference station that transmitted measurement correction data of the plurality of measurement corrections.

9. The receiver system as set forth in claim 1, wherein the at least one second receiver comprises a minimum shift keying (MSK) receiver.

10. The receiver system as set forth in claim 1, wherein the at least one second receiver comprises an FM subcarrier receiver.

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11. The receiver system as set forth in claim 1, wherein the at least one second receiver comprises a receiver to receive measurement corrections from a satellite.

12. The receiver system as set forth in claim 1, wherein the at least one second receiver comprises a connection to a telephone system.

~~13. The receiver system as set forth in claim 1, wherein the at least one second receiver comprises a different types of receivers for selectively receiving measurement corrections across different types of media.~~

14. A Global Positioning System (GPS) receiver system comprising:

a first receiver for receiving GPS data transmitted from at least one satellite;

at least one second receiver for receiving a first measurement correction transmitted from a first reference station closest in distance to the first receiver and at least one second measurement correction transmitted from at least one second reference station further in distance from the first receiver than the first reference station;

a measurement correction adjustment circuit coupled to receive the first measurement correction and the at least one second measurement correction, said measurement correction adjustment circuit generating a combined measurement correction as the weighted combination of the first measurement correction and the at least one second measurement correction; and

a position determination circuit for determining the location of the receiver system based upon the GPS data and the combined measurement correction.

15. The receiver system as set forth in claim 14, wherein the combination circuit further adjusts the measurement corrections to minimize a time bias and frequency bias of the measurement corrections prior to combining the measurement corrections.

16. The receiver system as set forth in claim 14, wherein the measurement correction adjustment circuit determines weights given to each measurement correction based upon the distance between the reference station and receiver system, wherein greater weight is given to a measurement correction transmitted from shorter distances from the receiver system.

17. A Global Positioning System (GPS) receiver system comprising:

a first receiver for receiving GPS data transmitted from at least one satellite;

at least one second receiver for receiving a first measurement correction transmitted from a first reference station and at least one second measurement correction transmitted from at least one second reference station;

a circuit coupled to receive the first measurement correction and the at least one second measurement correction, said circuit computing a common mode difference between the first measurement correction and the at least one second measurement correction and determining when the common mode difference varies significantly to indicate an error in transmission.

18. The receiver system as set forth in claim 17, wherein the at least one second receiver comprises a different types of receivers for selectively

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receiving measurement corrections across different types of media, the type of receiver selected based upon the common mode difference.

19. The receiver system as set forth in claim 17, wherein the common mode difference is derived from the time bias between reference stations.

20. The receiver system as set forth in claim 17, wherein the common mode difference is derived from the rate bias between reference stations.

21. The receiver system as set forth in claim 17, wherein the at least one second reference station comprises a reference station next closest in distance to the receiver system.

22. A Global Positioning System (GPS) receiver system comprising:

a first receiver for receiving GPS data transmitted from at least one satellite;

at least one second receiver for receiving a plurality of measurement corrections transmitted respectively from a plurality of reference stations;

a processing circuit coupled to receive the GPS data and the plurality of measurement corrections, the processing circuit detecting errors in a first measurement correction data of the plurality of measurement corrections, replacing erroneous data detected in the first measurement correction data with replacement data, and determining the location of the receiver system based upon the GPS data and the first measurement correction data adjusted as needed to compensate for errors.

23. The receiver system as set forth in claim 22, wherein the replacement data comprises a corresponding portion of a second measurement correction data of the plurality of measurement corrections, adjusted by the common mode difference.

24. The receiver system as set forth in claim 22, wherein the replacement data comprises a weighted combination of the first measurement correction data and the second measurement correction data.

25. The receiver system as set forth in claim 22, wherein the replacement data comprises a weighted combination of a group of measurement correction data of the plurality of the measurement corrections.

26. The receiver system as set forth in claim 22, wherein the common mode difference is derived from a time bias between reference stations.

27. The receiver system as set forth in claim 22, wherein the common mode difference is derived from a rate bias between reference stations.

28. The receiver system as set forth in claim 22, wherein a first measurement correction data of the plurality of measurement corrections is transmitted by a first reference station of the plurality of reference stations that is closest in distance to the receiver system and a second measurement correction data of the plurality of measurement corrections is transmitted by a second reference station of the plurality of reference stations located second closest in distance to the receiver system.

~~29. A Global Positioning System (GPS) receiver system comprising~~:

a first receiver for receiving position information transmitted from at least one satellite;

at least one second receiver for receiving a plurality of measurement corrections transmitted from a plurality of reference stations;

a processing circuit coupled to receive the plurality of measurement corrections and said circuit generating a combined measurement correction from the plurality of measurement corrections and determining the location of the receiver system based upon the position information and the ~~combined measurement correction.~~

30. The receiver system as set forth in claim 29, wherein the processing circuit performs a weighted combination of the plurality of measurement corrections and determines weights given to measurement corrections based upon the distance between a corresponding reference station of the plurality of reference stations and the receiver system, wherein greater weight is given to measurement corrections transmitted from reference stations closer in distance to the receiver system.

31. In a receiver system for receiving position information transmitted from at least one first source, a method for correcting position information comprising the steps of:

receiving a plurality of measurement corrections transmitted from a plurality of reference stations ;

detecting errors in a first measurement correction of the plurality of measurement corrections;

if an error is detected in the first measurement correction, replacing erroneous portions of the first measurement correction with replacement data; and

determining the location of the receiver system based upon the position information and the first measurement correction adjusted as needed when errors are detected.

32. The method as set forth in claim 31, further comprising the step of adjusting the plurality of measurement corrections to account for time bias and frequency bias.

33. The method as set forth in claim 31, wherein the step of replacing erroneous data comprises the steps of generating replacement data by combining a group of measurement corrections of the plurality of measurement corrections to generate combined measurement correction data and replacing erroneous portions of the first measurement correction data with corresponding portions of the combined measurement correction data.

34. The method as set forth in claim 31, wherein the step of replacing erroneous data comprises the step replacing erroneous portions of the first measurement correction data with corresponding portions of a second measurement correction data of the plurality of measurement corrections.

~~35.~~ In a receiver system for receiving position information transmitted from at least one first source, a method for correcting position information comprising the steps of:

receiving a plurality of measurement corrections transmitted from a plurality of reference stations;

generating a combined measurement correction from the plurality of measurement corrections; and

determining the location of the receiver system based upon the position information and the combined measurement correction.

36. The method as set forth in claim 35, wherein the step of generating comprises the steps of determining weighted values of measurement corrections based upon the distance between a reference station of the plurality of reference stations that transmitted the measurement correction and the second receiver, wherein greater weight is given to measurement corrections transmitted from reference stations closer in distance to the second receiver, adding the weighted values and averaging the sum.

37. The method as set forth in claim 35 wherein the step of generating comprises the steps of generating the combined measurement correction from the plurality of measurement corrections using a least squares method.

38. The method as set forth in claim 35, further comprising the step of adjusting the plurality of measurement corrections to minimize a time bias and frequency bias.

39. In a receiver system for receiving position information transmitted from at least one first source, a method for monitoring data integrity comprising the steps of:

receiving a plurality of measurement corrections transmitted from a plurality of reference stations; and

computing a common mode difference among the measurement corrections and determining when the common mode difference varies significantly to indicate an error in transmission.